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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,758	10/02/2003	Haoren Zhuang	14580-037001	6618
20985	7590	08/24/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			VINH, LAN	
			ART UNIT	PAPER NUMBER

1765

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/678,758

Applicant(s)

ZHUANG ET AL.

Examiner

Lan Vinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 13 is/are allowed.
- 6) ☒ Claim(s) 1 and 10 is/are rejected.
- 7) ☒ Claim(s) 2-4, 8, 9, 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Okita (US 2003/0155595A1)

Okita discloses a method for forming a semiconductor device having a ferroelectric capacitor. The method comprises the steps of:

depositing a ferroelectric material 14 (PZT) over an insulating layer 8 (col 4, paragraph 0061,0063; fig. 3D)

a first etching step of etching of the ferroelectric material to form openings in it (col 4, paragraph 0066; fig. 3E)

depositing a layer 18 of alumina/electrode (it is known in the art to use aluminum oxide/alumina as an electrode, see prior art of record for evidence of this basis) into the openings formed in the ferroelectric layer (col 4, paragraph 0070; fig. 3F)

a second etching step, after depositing the layer 18/electrode, of etching to remove layer 18/electrode and the insulating layer 8 at the bottom of the openings to form opening /gaps in it (col 5, paragraph 0076; fig. 3I)

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inserting conductive material 21b into the openings/gaps (col 5, paragraph 0086, fig. 3J)

Allowable Subject Matter

3. Claims 2-4, 8-9, 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

Claims 7, 13 allowed.

The following is a statement of reasons for allowance. Regarding claims 7, 13, the cited prior art of record fails to disclose or suggest a method for forming a ferroelectric device comprises the step of depositing an electrode layer into the openings formed in the ferroelectric layer in which the first etching step leaves a film of ferroelectric material remaining at the bottom of the openings, in combination with the rest of the limitations of claims 7, 13

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hubby (US 2002/0154265) discloses that aluminum oxide/alumina/metal oxide can be used for an electrode (col 3, paragraph 0030)

Marsh (US 2001/0055869) discloses forming a conductive layer comprises of aluminum oxide/alumina

Response to Arguments

5. Applicant's arguments filed 7/5/2006 have been fully considered but they are not persuasive.

The applicants argue that claim 1 requires a vertical capacitor whereas Okita is a horizontal capacitor. However, it is noted that "for forming a vertical ferrocapacitor" is a preamble that recites the purpose of the claimed invention. The examiner recognizes that "A preamble that recites the use or purpose of the claimed invention generally does not limit the claims. Catalina, 62 USPQ2d at 1785 . Thus it is asserted that Okidata method is capable of forming a vertical ferrocapacitor as the claimed invention as per claim 1

The applicants argue that claim 1 requires that the ferroelectric material deposited over an insulating layer since Figure 3D of Okida shows the ferroelectric film 14 on the conductive film, the ferroelectric material in Okita is not on an insulating layer. This argument is unpersuasive because it is not in commensurate with scope of claim 1 since claim 1 clearly requires "depositing a ferroelectric material over an insulating layer" instead of depositing a ferroelectric material on an insulating layer. In addition, Okida discloses forming the ferroelectric layer 14 over the insulating layer 8 as required in claim 1.

It is argued that claim 1 requires a first etching of etching the ferroelectric material to form opening in it whereas Fig. 3E of Okida shows the ferroelectric film 14 completely removed down to the insulating film 8. This argument is unpersuasive because while it is true that Fig. 3E of Okida shows the ferroelectric film 14 completely removed down to

the insulating film 8, it is also true that Fig. 3E shows openings are etched in the ferroelectric layer as required by claim 1

The applicants argue that any reputable technical text refers to alumina as an electrical insulator. However, US application Pub No US 2001/0055869 discloses forming a conductive layer comprises of aluminum oxide/alumina (page 9, claim 27). Thus, it is maintained that Okida layer 18 reads on the claimed electrode layer

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.



LV

August 18, 2006